

X-FLOW R21 0.83UFC ULTRAFILTRATION MEMBRANE

MEMBRANE ELEMENT DATASHEET

R21 0.83UFC 0.83mm
ARTICLE CODE : 1521BL895E

GENERAL INFORMATION

R21 0.83UFC is an ultrafiltration module, used for production of process water. Typical applications are the filtration of surface water and WWTP effluent. Mode of operation is feed-and-bleed with a minor crossflow or dead-end mode with regular backwash (permeate only) and chemically enhanced backwash.

GENERAL SOLVENT RESISTANCE

Since the resistance of the membrane to solvents strongly depends on the actual process conditions, the indications given below should only be considered as guideline.

| | |
|---------------------------------|----|
| Acids | ++ |
| Bases | ++ |
| Organic esters, ketones, ethers | - |
| Aliphatic alcohols | + |
| Aliphatic hydrocarbons | + |
| Halogenated hydrocarbons | -- |
| Aromatic hydrocarbons | -- |
| Polar organic solvents | -- |
| Oils | ++ |

MEMBRANE CHARACTERISTICS

- Hydrophilic membrane composed of a blend of polyvinylpyrrolidone and polyethersulfone
- A nominal pore size of 20nm.
- Structure asymmetric/microporous
- High performance and a very good anti-fouling behaviour
- Typical permeate quality SDI<3, turbidity <0,1 NTU
- Membrane filtration provides 99.9999% (LOG6) reduction of bacteria (*Pseudomonas diminuta*) and 99.99% (LOG 4) reduction of virus (MS2 colifages) by mechanical means. EPA Est. No. 090374-NLD-001

CLEANING CHEMICAL RESISTANCE

Sodium Hypochlorite

- Typical 200 ppm, at ≤ 40 °C at \geq pH 10
- Maximum 500 ppm
- 250.000 ppm hours cumulative; \geq pH 10

Chlorine Dioxide

- Typical 1 ppm, at ≤ 40 °C
- Maximum 2 ppm
- 90.000 ppm hours cumulative; pH 11

Hydrogen Peroxide

- Typical 200 ppm, at ≤ 40 °C
- Maximum 500 ppm
- 350.000 ppm hours cumulative

Note:

The above figures for oxidant contact represent the membrane resistance to each individual oxidizing agent. The total combined exposure for Sodium Hypochlorite and Chlorine Dioxide will be calculated as follows:

Combined exposure (NaOCl + ClO₂) = 2.6 x Exposure to ClO₂ (in ppm hours) + Exposure to NaOCl (in ppm hours) < 250.000 ppm hours

As a good working practice and in order to maximize the lifetime of the membrane it is advised to reduce the membrane exposure to oxidizing agents to a minimum. Exposure limits are also affected by temperature,

pH and the presence of metals. In order not to exceed maximum exposure limits, membranes must be preserved free of any oxidizing agent when the plant is stopped.

Acids

| | |
|-------------------|----|
| Hydrochloric Acid | ++ |
| Nitric Acid | ++ |
| Sulphuric Acid | ++ |
| Phosphoric Acid | ++ |
| Acetic Acid | ++ |
| Citric Acid | ++ |

pH > 2 during filtration
pH > 1 during cleaning

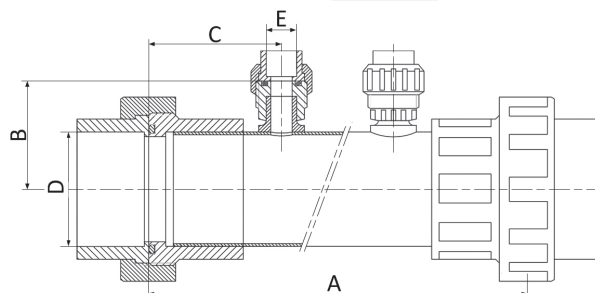
Bases

| | |
|---------------------|----|
| Sodium Hydroxide | ++ |
| Potassium Hydroxide | ++ |

pH < 12 during filtration
pH < 13 during cleaning

MODULE SPECIFICATIONS

| Membrane diameter [mm/mil] | Effective membrane area [m ² /ft ²] | Module length A [mm/inch] | Permeate length B [mm/inch] | Permeate position C [mm/inch] | Feed connection diameter D [mm/inch] | Permeate connection diameter E [mm/inch] |
|----------------------------|--|---------------------------|-----------------------------|-------------------------------|--------------------------------------|--|
| 0.83 [32.7] | 3.8 [40.9] | 1130 [44.5] | 71 [2.8] | 90 [3.5] | 75 [3.0] | 20 [0.8] |



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OPERATING SPECIFICATIONS

| Max. system pressure | Max. trans-membrane pressure | Max. backflush pressure | Temp. range |
|----------------------|------------------------------|-------------------------|----------------------|
| [kPa/psi] | [kPa/psi] | [kPa/psi] | [°C/°F] |
| 600 [86] @20°C | 300 [43] | 300 [43] | 0 - 60 [32 - 140] |

- Backwash water should be free of particulates and should be of UF permeate quality or better.
- Backwash pumps should preferably be made of non-corroding materials, e.g., plastic or stainless steel. If compressed air is used to pressurize the backwash water, do not allow a two-phase air/water mixture to enter the element.

- To avoid mechanical damage, do not subject the membrane module or element to sudden temperature changes, particularly decreases. Bring the module or element back to ambient operating temperature slowly (max. value 3 °C/min). Failure to adhere to this guideline can result in irreparable damage.

Operation of membrane modules at any combination of maximum limits of pH, concentration, pressure or temperature, during cleaning or production, will influence the membrane lifetime.

CERTIFICATIONS

None

TECHNICAL SPECIFICATIONS

Materials of Construction

| | |
|----------|---------|
| Housing | PVC-C |
| Potting | Epoxy |
| Membrane | PES/PVP |

Process Characteristics (water, 20 °C)

| Hydraulic membrane diameter | Crossflow flow rate (*) | Pressure-drop across module at 1 m/s | Pressure-drop across module at 2 m/s |
|-----------------------------|-------------------------|--------------------------------------|--------------------------------------|
| [mm/mil] | [m ³ /h/gpm] | [kPa/psi] | [kPa/psi] |
| 0.83 [32.7] | 3.4 x v [15.0 x v] | 40 [5.80] | 84 [12.18] |

(*) superficial velocity (v) in m/s [ft/s]

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TIGHT ULTRAFILTRATION MEMBRANE

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STORAGE

New membrane modules can be stored as supplied in the original packaging. The membrane modules contain an aqueous preservation solution of glycerine (20wt%) and sodium metabisulfite (1wt%) to prevent dehydration and control bacterial growth. The membrane modules are packed in plastic bags which are vacuum sealed to keep the moisture in the module. Membrane modules should be stored in a dry, normally ventilated place, away from sources of heat ignition and direct sunlight. Storage temperature should be between 0 and 40 °C. Pentair instructions for transport and storage are to be followed at all times and available upon request. It is recommended to have the membrane modules installed into the UF skids and commissioned as soon as possible. The membrane shelf life is maximum 6 months from the date the modules are announced ready for delivery ex works Pentair warehouse. After expiry of the shelf life all warranties are null and void.



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